CLAIMS

That which is claimed is:

1. A method for identifying an agent that modulates NF-κB activity in transcription of a gene in a eukaryotic cell, the method comprising:

contacting a RelA protein with a candidate agent in vitro for a time sufficient to allow for deacetylation of RelA by the agent; and

detecting deacetylation of RelA;

wherein detection of deacetylation of RelA by the candidate agent indicates that the agent inhibits activity of NF-κB in gene transcription.

2. The method of claim 1, wherein RelA is detectably labeled so that deacetylation results in release of the detectable label from RelA, and detecting deacetylation of RelA is by detecting a decrease in detectably labeled RelA.

3. The method of claim 1, wherein RelA is detectably labeled so that deacetylation results in release of the detectable label from RelA, and detecting deacetylation of RelA is by detecting released detectable label.

4. The method of claim 1, wherein said detecting of deacetylation of RelA is compared to deacetylation of RelA in the presence of histone deacetylase 3 (HDAC3).

5. The method of claim 1, wherein RelA is within a eukaryotic cell and detecting of deacetylation of RelA is by detection of export of RelA from the nucleus, wherein detection of RelA export indicates RelA is deacetylated.

6. The method of claim 1, wherein RelA is within a eukaryotic cell and detecting of deacetylation of RelA is by detection of an increase in RelA binding to IκBα.

7. A method for identifying a substance that inhibits NF-κB activity, comprising testing a substance for its ability to deacetylate RelA by:

exposing a sample comprising RelA to a test substance;

comparing acetylation of RelA in the sample comprising the test substance to acetylation of RelA in a sample without the test substance; and

determining whether the test substance specifically promotes deacetylation of RelA;

wherein activity of the test substance in deacetylation of RelA indicates the test substance inhibits NF-κB activity.

8. The method according to claim 7, wherein the exposing step includes using an extract of cells, which were treated with an inducer for NF-κB activation, or a fraction of said extract.

9. The method according to claim 7, wherein a cell-free system is used for the exposing step.

10. The method according to claim 9, wherein RelA is bound to a support.

11. A method for inhibiting the transcription of genes in a higher eukaryotic cell by inhibiting the activity of NF-κB, comprising contacting the cell with an agent that specifically deacetylates RelA.

12. An isolated agent that specifically deacetylates RelA, which agent is used for the treatment of pathological conditions involving the expression of genes controlled by the transcription factor NF-κB.

13. A pharmaceutical composition comprising at least one substance that specifically deacetylates RelA and a pharmaceutically acceptable carrier.

14. A method for the treatment of pathological conditions, which involve the expression of genes, which are controlled by the transcription factor NF-KB, comprising administering to a patient a substance that specifically deacetylates RelA.

15. . A method for identifying an agent that modulates NF-κB activity in transcription of a gene in a eukaryotic cell, the method comprising:

contacting a RelA protein with a candidate agent in vitro for a time sufficient to allow for acetylation of RelA by the agent; and

detecting acetylation of RelA;

wherein detection of acetylation of RelA by the candidate agent indicates that the agent increases activity of NF-κB in gene transcription.

16. The method of claim 15, wherein acetylation of RelA is detected by incorporiation of a detectable label upon acetylation. and detecting acetylation of RelA is by detecting an increase in detectably labeled RelA.

17. The method of claim 15, wherein said detecting of acetylation of RelA is compared to acetylation of RelA in the presence of p300 or CBP.

18. The method of claim 15, wherein RelA is within a eukaryotic cell and detecting of acetylation of RelA is by detection of an decrease in RelA binding to IκBα.